

Doronomyrmex pacis Kutter 1945, a socially parasitic ant new to Germany

(Insecta, Hymenoptera, Formicidae)

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The parasitic ant *Doronomyrmex pacis* is recorded for the first time from Germany: three colonies were found at an elevation of 1660m at Jenner, Berchtesgaden National Park.

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Introduction

Of the approximately 10.000 described species of ants some 200 are social parasites, i.e. they temporarily or permanently depend on the help of workers from another ant species (e. g., Hölldobler & Wilson 1990). Workerless parasites ("inquilines") are among the rarest species of ants. Many are known only from their type localities, whereas others are discontinuously distributed over large areas. The knowledge on the geographical range of social parasites might help to understand the evolution of social parasitism (Baroni-Urbani 1967) and is fundamental for the protection of these rare ant species (Buschinger 1987). Each new record is therefore of considerable interest.

The holarctic ant, *Leptothorax* (s.str.) *acervorum* is host of at least four parasites: the slave-maker *Harpagoxenus sublaevis*, and the workerless *Doronomyrmex kutteri*, *D. goesswaldi*, and *D. pacis*. *Doronomyrmex pacis*, Kutter 1945 was described from a single queen collected in Binntal, Valais, Switzerland. Since then it has repeatedly been rediscovered in various parts of the Alps: Switzerland (Saas Fee, Zermatt, Ofenpaß etc., Kutter 1969, Buschinger 1971), northern Italy (Schluderbach, Buschinger 1971; Toblach, Buschinger et al. 1981; Schlanders, Buschinger, pers. comm.), Austria (Tennengebirge, Winter 1972), France (Maurienne, Buschinger et al. 1981; Briançon, Heinze & Buschinger, unpubl.), and Slovenia (Triglav, Buschinger pers. comm., Buschinger & Douwes in press). We here report the first finding of *Doronomyrmex pacis* from Germany and document some life history traits of this species.

Results and Discussion

Some thirty complete colonies of *Leptothorax* (s.str.) *acervorum* were collected on July 20 and 21, 1991 near "Schneibsteinhaus", Jenner, Berchtesgaden National Park, southern Germany, at an elevation of appr. 1660 m. Nests were found in rotting sticks and roots of dwarf pine, *Pinus mugo*, on the edge of stands of coniferous trees amidst alpine meadows. In two colonies a *D. pacis* queen was found, and in a third nest, *D. pacis* sexuals enclosed in the laboratory shortly after collection. *D. pacis* queens are easily distinguished from host queens: whereas the latter are brownish and coarsely sculptured, *D. pacis*

queens are shiny and black. Furthermore, parasite queens are much smaller than host queens.

All three *D. pacis* colonies from Jenner contained alate sexuals of *L. acervorum*, one or more *L. acervorum* queens, and between appr. 20 and 150 workers. Five *L. acervorum* queens were dissected: their ovaries were strongly elongated and contained corpora lutea, but no developing or mature oocytes. Whether this condition reflects a regular reduction in fertility in midsummer or reproductive inhibition through the parasite queen, as suggested by Buschinger (1990), is not yet clear. Many social parasites, which were thought to tolerate fertile host queens, interfere with egg-laying or even kill host queens (e.g., Allies et al. 1986; Buschinger & Klump 1988). Openly aggressive or ritualized dominance interactions of queens, which might probably cause ovary degeneration (e.g., Heinze & Smith 1990), were not observed.

According to laboratory observations, queens of *D. pacis* exhibit sexual calling behavior (e.g., Buschinger 1972) and mate in the immediate neighborhood of the maternal nest. As yet it is not known whether mated queens may seek readoption into the maternal nest instead of invading a new host colony. Winter (1972) found a colony with two dealate female sexuals of *D. pacis*, however, their reproductive status was not examined. After eclosion of sexuals we observed heavy fighting between two dealate gynes of *D. pacis* in a single nest, probably between mother and one of her offspring. Both tumbled about the nest, pulling each other's legs and antennae with their mandibles and extruding their stings. One individual left the nest about half an hour later. Aggression between parasite queens is known from several species, e.g. *Harpagoxenus sublaevis*, *Doronomyrmex goesswaldi* (Buschinger & Klump 1988), *Leptothorax wilsoni* (Heinze 1989), and *Epimyrma algeriana* (Buschinger et al. 1990), all of which also attack fertile host queens. More observations are needed to clarify the social organization of *D. pacis* colonies.

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